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Brief Report

When to cooperate and when to compete: Emotional intelligence in interpersonal decision-making

Pablo Fernández-Berrocal [a,*], Natalio Extremera [a], Paulo N. Lopes [b], Desireé Ruiz-Aranda [a]

[a] University of Málaga, Campus de Teatinos, s/n, 29071 Malaga, Spain
[b] Catholic University of Portugal, Travessa Palma, 1649-023 Lisboa, Portugal

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ABSTRACT

This study examined the relationship between emotional intelligence (EI), assessed with an ability test, and interpersonal decision-making using the Prisoner's Dilemma Game (PDG). Previous research found that individuals who self-report high EI tend to cooperate more than others in the Prisoner's Dilemma. We relativize these findings by showing that individuals scoring high on an ability measure of EI choose effective strategies to deal with three different PDG conditions during real interactions. This suggests that emotionally intelligent individuals are not rigidly predisposed to cooperate regardless of others' behavior. Instead, EI is associated with the capacity to respond flexibly to others' strategies and to the interaction context in order to maximize long-term gains – even when this means competing rather than cooperating.

1. Introduction

Emotional intelligence (EI) theory proposes that the abilities to perceive, understand, use and manage emotions in oneself and others are inter-related and constitute a distinct form of intelligence (Mayer & Salovey, 1997). According to this theory, emotionally intelligent individuals use these skills to navigate the social world and manage interpersonal interaction and social dilemmas effectively. EI plays a role in the establishment and maintenance of interpersonal relationships (Mayer, Roberts, & Barsade, 2008). Previous research has found that individuals scoring highly on ability measures of EI (Mayer–Salovey–Caruso Emotional Intelligence Test, MSCEIT) tend to have more positive and less conflictive relationships with others in a range of naturalistic interpersonal contexts (e.g., Brackett, Warner, & Bosco, 2005; Lopes, Salovey, & Straus, 2003; Lopes et al., 2004). EI predicts emotional and social competencies not only in a context of consolidated social relations, but also in initial encounters with strangers (Brackett, Rivers, Shiffman, Lerner, & Salovey, 2006). Recent studies using neuroimaging techniques provide further evidence that persons with higher MSCEIT scores solve social problems more quickly and accurately than their counterparts, while revealing less brain activity, even after controlling for differences in performance in solving non-social problems (Reis et al., 2007). Studies with clinical samples lead to similar conclusions: patients with psychopathologies such as generalized social phobia, schizotypy, and schizophrenia, who score lower on the MSCEIT, show poorer interpersonal and social functioning than control group with higher MSCEIT scores (Aguirre, Sergi, & Levy, 2008; Jacobs et al., 2008; Kee et al., 2009).

On the basis of existing theory and research, people with higher EI would be expected to anticipate others' actions and therefore make better interpersonal decisions in the course of social interactions. This hypothesis can be tested using the Prisoner's Dilemma Game (PDG; Axelrod, 1984), one of the most widely used paradigms for simulating the course of social decision-making. Of the different strategies analyzed in the literature on PDG (e.g., *always cooperate*, *always defect*, *tit-for-tat*), the most effective for achieving cooperation based on reciprocity in the medium and long term is tit-for-tat (Axelrod, 1984). Studies using the PDG have shown that emotional states and individual differences related to emotional traits influence cooperation. For example, Nelissen, Dijker, and De Vries (2007) reported that fear reduces, while guilt increases, cooperation in PDG; Hirsh and Peterson (2009) showed that higher scores on the withdrawal facet of neuroticism and the enthusiasm facet of extraversion independently predict greater likelihood of cooperation.

But how do people with high EI behave? Schutte et al. (2001; Study 4) found that participants scoring higher on a self-report measure of EI cooperated more in PDG. This raises a concern that high-EI individuals might be inclined to cooperate in PDG even when they should adopt a different strategy to defend their interests. Evolutionary game theory (Axelrod, 1984) has shown that certain strategies, such as *always cooperate*, are not evolutionarily stable, because in certain highly competitive contexts they do

* Corresponding author. Address: University of Málaga, Campus de Teatinos, s/n, 29071 Malaga, Spain. Fax: +34 95 213 26 31.
E-mail address: berrocal@uma.es (P. Fernández-Berrocal).

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not allow individuals to confront others who use the *always defect* strategy. In order to examine whether high EI would lead individuals to cooperate regardless of the other player's behavior, or instead allow them to respond differently to helpers and cheats, we decided to analyze the strategies used by emotionally intelligent individuals in different PDGs. We carried out our study using an ability-based measure of EI (MSCEIT) in order to avoid reliance on self-report measures, which can introduce error due to limited or inaccurate self-knowledge, self-enhancement bias and other distortions (Mayer et al., 2008; Schlegel, Grandjean, & Scherer, 2013).

We investigated the relationship between participants' EI and their behavior in a PDG in face-to-face interaction with a confederate. The confederate used a consistent and predetermined interaction strategy (*always cooperate*, *always defect* or *tit-for-tat*), about which participants were not forewarned. Statistical analyses controlled for cognitive intelligence and tendency to cooperate. Our hypothesis was that people with high EI would adapt their response to the other person's behavior (*always cooperate*, *always defect* or *tit-for-tat*), thereby maximizing gains across conditions.

2. Method

2.1. Participants

The sample consisted of 232 university students (42 male and 190 female) with a mean age of 22 years (*SD* = 4.19), who participated in the study in return for course credit.

2.2. Procedures and measures

Data were collected in two phases. In the first phase, participants completed measures of EI, cognitive intelligence, tendency to cooperate and socio-demographic information – during normal lecture hours and in the presence of a researcher. In the second phase, one month later, individual participants played a PDG with a confederate in a laboratory room.

Emotional intelligence was measured using the *Mayer*, *Salovey*, *Caruso Emotional Intelligence Test* (MSCEIT v.2.0; Mayer, Salovey, & Caruso, 2002). This ability- and knowledge-based test of 141 items assesses the four dimensions of EI proposed by Mayer and Salovey (1997): identifying, using, understanding and managing emotions. Tasks range from identifying emotion in human faces to identifying strategies for managing emotions in social situations. The four dimensions are thought to contribute jointly to the quality of interpersonal interaction and effective decision-making and therefore can be subsumed into a general factor of EI (Mayer et al., 2002). Thus, for the sake of parsimony, we report results based on total scores rather than sub-dimensions. Mayer et al. (2002) reported good reliability values for total MSCEIT scores, including internal consistency (split-half reliability, .91) and test–retest reliability (.86). We used scores based on consensus norms, which map closely onto scores based on expert norms. In our study the split-half reliability was .73, with *M* = 98.77 (*SD* = 15.55) for total MSCEIT score. For additional information on the psychometric properties of the MSCEIT, see Mayer et al. (2002) and Mayer, Salovey, Caruso, and Sitarenios (2003).

Cognitive intelligence. The D-48 Intelligence Test was used to assess fluid intelligence (Gough & Domino, 1963). This general intelligence test evaluates the capacity to conceptualize and apply systematic reasoning to new problems. It contains 48 sets of dominoes displayed in logical series. Each set includes a domino with one blank face that respondents must fill in. We included cognitive intelligence as a control variable in our analyses to show that the effects observed are specific to emotional intelligence and cannot be explained by other intelligence constructs. This control is especially important because previous research has shown that persons with higher cognitive ability tend to be more cooperative in both experimental and real-world Prisoner's Dilemmas (Jones, 2008). The D-48 Intelligence Test reveals adequate internal consistency (.89) and test–retest reliability (.69), and no ethnicity or gender bias (Domino & Morales, 2000). In the present study, the mean score was 28.28 (*SD = 5.33*).

Tendency to cooperate versus compete was measured one month before the real PDG by describing to participants the classic Prisoner's Dilemma task for two players and showing the payoff matrix (Axelrod, 1984; see Appendix). Participants were asked "Imagine you are playing; what would be your first move: cooperate or compete?" (Komorita, Hilty, & Parks, 1991). Responses were coded 0 for cooperate (61.2% of respondents) and 1 for compete. We included tendency to cooperate *versus* compete as a control variable in our analyses, because previous research in social dilemmas has found that people with a tendency to cooperate attempt to maximize the joint outcome for both players (Fehr & Fischbacher, 2003; Nelissen et al., 2007).

Prisoner's Dilemma Game. We used a two-player version of the PDG (Axelrod, 1984). In any one round of this game, a participant scores 5 points in s/he competes and the opponent cooperates, 3 points if both cooperate, 1 point if both compete, and 0 points if s/he cooperates and the opponent competes (see Appendix). Participants were randomly assigned to three experimental conditions (dilemma type): *always cooperate*, *always defect* or *tit-for-tat*. In the *always cooperate* condition, the confederate always cooperated, regardless of the participant's behavior, so that his/her first move was to cooperate. In the *always defect* condition, the confederate always defected, regardless of the participant's behavior, so that his/her first move was to compete. In the *tit-for-tat* condition, the confederate used the *tit -for- tat* strategy, and his/her first move was to cooperate.

Before the PDG began, participants were provided basic instructions and told that the aim of the game was to obtain as many points as possible. For each round, the players (participant and confederate) presented their choices simultaneously. Participants did not know how many rounds they would play, and were told that the game would be ended at random. In reality, the game was always stopped after 20 rounds. The outcome of interest was the total number of points obtained by each participant in the PDG. However, the range of possible scores varied across conditions. If the confederate always competed, the minimum score a participant could obtain was 0 and the maximum 20. In the *always cooperate* condition, the minimum was 60 and the maximum 100. In order to obtain a meaningful common metric to analyze the effect of EI across conditions, we standardized PDG scores within condition (*M* = −.09; *SD* = 1.07).

3. Results

Intercorrelations between key variables, reported in Table 1, indicate that high-EI individuals tended to score higher on the PDG than their low-EI counterparts. Women scored slightly higher than men on the MSCEIT. Other correlations were not significant.

To test our hypothesis, we used a General Linear Model (GLM) approach for analysis of covariance (ANCOVA), focusing on the effect of EI, after controlling for cognitive intelligence, tendency to cooperate, sex, and age, as well as experimental condition. Although ANCOVA showed a significant main effect of condition taking into account these covariates ($F(2,222) = 10.77$, $p < .001$, $\eta^2 = .09$), we did not examine this effect further because overall mean differences across conditions had already been removed by standardizing the DV within condition. In support of our